

REMARKS/ARGUMENTS

Re-examination and favorable reconsideration in light of the above amendments and the following comments are respectfully requested.

Claims 1 - 18 are pending in the application. Currently, no claim has been allowed. By the present amendment, new claim 19 has been added to the application.

In the office action mailed February 23, 2004, claims 1 - 3, 5 - 11, 15, 17, and 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,860,283 to Coleman et al. in view of U.S. Patent No. 6,124,646 to Artinian et al.; claims 1 - 3, 5 - 13, and 15 - 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,503,666 to Christoff in view of Artinian et al.; claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Coleman et al. or Christoff in view of Artinian et al. and further in view of U.S. Patent No. 6,189,324 to Williams; and claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over Coleman et al. or Christoff in view of Artinian et al. and further in view of U.S. Patent No. 5,442,905 to Claeys et al.

The foregoing rejections are traversed by the instant response.

The present invention relates to an electric power and cooling system for supplying electric power and conditioned air to an aircraft having at least one engine. The system comprises a single shaft, a power turbine mounted on the shaft for receiving fresh pressurized air from said engine, a cooling turbine mounted on said shaft and receiving said fresh pressurized air from said engine, a generator mounted on said shaft, and a fan mounted on said shaft for creating a flow of air for cooling said fresh pressurized air. None of the cited and applied prior art, taken alone or in combination with each other, teaches or suggests this combination of elements.

The Coleman patent cited by the Examiner relates to an environmental control system. As explained in column 5, lines 9 - 40 of this patent, bleed air from the engine passes through a pre-cooler 30, where it is cooled to around 150/200 degrees Centigrade, and then to the precooler 32, where it is cooled to around 90/120 degrees Centigrade, by the ambient air via the ram intake 42, and then passes to a flow control valve 52. The bleed air then enters the power turbine, where it does work and exits around 3/6 degrees Centigrade, and enters a water extractor 54. From there, the air passes via a flow control valve 52 into cabin 28 to condition it. From the cabin 28, the air enters the intercooler 20, where it cools the closed loop air, and then is

fed to the pre-cooler 30 regeneratively to cool the bleed air entering the system and then is discharged outboard at 34.

As can be seen from this description, Coleman fails to teach or suggest the following claimed elements: (1) the cooling turbine, the power turbine, the generator and the fan mounted to a single shaft (there is nothing in Coleman that says that the generator 26 is mounted on any shaft); (2) a cooling turbine which receives the fresh pressurized air from the engine (the cooling turbine in Coleman receives air from the cabin which has been modified); (3) the pre-cooler receiving at least one of mid stage bleed air and high stage bleed air from the engine (claim 2) (Coleman is entirely silent on this point); (4) means for delivering first stage fan air to the precooler heat exchanger for use as a heat sink (claim 3); (5) the secondary heat exchanger disposed between the primary heat exchanger and the cooling turbine (claim 7); (6) the secondary heat exchanger mounted in a ram air duct (claims 8 and 10); (7) the secondary heat exchanger for delivering air at a temperature near ambient (claims 9 and 11); (8) means for dumping air exiting the power turbine overboard (claim 12) (air exiting the power turbine in Coleman is supplied to the cabin); (9) the condenser for removing moisture from air exiting the cooling turbine (claim 13); (10) the moisture removing means of claim 15; (11) the

delivering means of claim 16; and (12) the electric power supplying means for delivering power to electric pumps for operating hydraulic systems of claim 18.

The Artinian et al. patent does not cure these deficiencies in Coleman. Artinian does not teach mounting a cooling turbine, a power turbine, a generator and a fan to a common shaft and thus does not cure this deficiency in Coleman. There is absolutely no way one of ordinary skill in the art would be motivated by Artinian et al. to arrive at the claimed subject matter. The rejection made by the Examiner is merely a hindsight rejection. One of ordinary skill in the prior art having Artinian before him would not provide both a power turbine and a cooling turbine. According to Artinian's teaching, both are not needed. For this reason alone, the rejection of claim 1 fails. Additionally, Artinian does not teach or suggest providing a power turbine and a cooling turbine which both receive fresh pressurized bleed air from the engine. As for adding the condenser, reheater, and water extractor loop for conditioning air to be delivered to the cabin, there is no need for this in Coleman. The air exiting the cooling turbine in Coleman is not delivered to the cabin, thus there is no need to condition it. When the Examiner reconsiders the subject matter of claims 15,

he will see the error of the combination. As for the above noted deficiencies of Coleman, Artinian does not cure them.

For these reasons, claims 1 - 3, 5 - 11, 15, 17 and 18 are allowable over the proposed combination of Coleman and Artinian.

With regard to the rejection of claims 1 - 3, 5 - 13, and 15 - 18 over Christoff in view of Artinian, the Christoff reference fails to teach or suggest many of the claimed features. For example, Christoff does not teach or suggest mounting a generator, a power turbine, a cooling turbine, and a fan to a common shaft. With regard to the generator in Christoff, the Examiner has failed to note that this is a starter generator. It derives no power from the shaft. In fact, it provides power to the shaft via a gear box. There is no way that one of ordinary skill in the art would say that the generator is mounted to the shaft. Christoff also fails provide fresh pressurized bleed air to both the cooling turbine and the power turbine. The power turbine receives a mixture of fuel and air with air coming from the cabin and outside air. Christoff lacks a precooler heat exchanger disposed between the engine and the power turbine which receives at least one of mid stage bleed air and high stage bleed air (claim 2) and which delivers cooled bleed air to the power turbine; means for delivering first stage fan air to the precooler heat exchanger for use as a heat sink

(claim 3); a primary heat exchanger disposed between the precooler heat exchanger and the power turbine (claim 5); a primary heat exchanger mounted in a ram air duct (claim 6); a secondary heat exchanger mounted in a ram air duct (claims 8 and 10); the condenser of claim 13; the loop of claim 15; the delivering means of claim 16; and the electrical power supply means of claims 17 and 18.

The Artinian et al. patent is discussed above and the comments are repeated here. Artinian et al. does not cure the deficiencies of Christoff.

For these reasons, claims 1 - 3, 5 - 13, and 15 - 18 are allowable over the combination of Christoff and Artinian et al.

With regard to the rejection of claim 4 over Coleman et al. or Christoff in view of Artinian et al. and Williams, the Williams patent does not cure the deficiencies of the other references. Thus, claim 4 is allowable for the same reasons that its parent claims are allowable as well as on its own accord.

With regard to the rejection of claim 14 over Christoff in view of Artinian et al. and Claeys, the Claeys patent does not cure the deficiencies of Christoff and Artinian et al. Thus, claim 14 is allowable for the same reasons that its parent claims are allowable as well as on its own accord.

New claim 19 is allowable because none of the cited and applied prior art references teaches or suggests the claimed combination of elements.

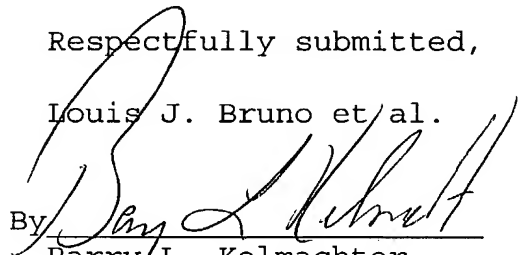
The instant application is believed to be in condition for allowance for the above reasons. Such allowance is respectfully solicited.

Should the Examiner believe that an additional amendment is needed to place the case in condition for allowance, he is hereby invited to contact Applicants' attorney at the telephone number listed below.

No fee is believed to be due as a result of the present response. Should the Commissioner determine that an additional fee is due, he is hereby authorized to charge said fee to Deposit Account No. 02-0184.

Respectfully submitted,

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Date: May 24, 2004

I, Nicole Motzer, hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313" on May 24, 2004.

